

WHAT IS CLAIMED IS:

1. An electro-optical device, comprising:
 - a scanning line formed above a substrate;
 - a data line crossing the scanning line;
 - a thin film transistor disposed in correspondence with an intersection of the scanning line and the data line;
 - a pixel electrode electrically connected to a drain region of the thin film transistor; and
 - a first storage capacitor formed by a plurality of layers between a gate electrode of the thin film transistor and the data line.
2. The electro-optical device according to claim 1, the first storage capacitor includes:
 - a first capacitor electrode;
 - an insulating film facing the first capacitor electrode; and
 - a second capacitor electrode arranged opposite to the first capacitor electrode with the insulating film provided therebetween to serve as a relay film for electrically connecting the drain region of the thin film transistor and the pixel electrode.
3. The electro-optical device according to claim 1, the first storage capacitor is formed to overlap with each of a semiconductor layer of the thin film transistor and the scanning line except a connection region between a source region of the thin film transistor and the data line.
4. The electro-optical device according to claim 2, further comprising:
 - a second storage capacitor including:
 - a second capacitor electrode;
 - an insulating film facing the second capacitor electrode; and
 - a third capacitor electrode opposed to the second capacitor electrode with the insulating film provided therebetween and including a same film as the gate electrode.
5. The electro-optical device according to claim 4, the third capacitor electrode is formed in parallel with the scanning line except in the connection region between the drain region of the thin film transistor and the second capacitor electrode.
6. The electro-optical device according to claim 4, the third capacitor electrode is electrically connected to the first capacitor electrode.

7. The electro-optical device according to claim 6, the electric connection between the third capacitor electrode and the first capacitor electrode is located in a region below the data line.

8. The electro-optical device according to claim 4, the third capacitor electrode comprises a part of a first capacitor lines extending along the scanning line, the first capacitor electrode includes a part of a second capacitor line extending along the scanning line, and the first and second capacitor lines are extended to the periphery of the image display region in which the pixel electrode is arranged, and electrically connected to each other.

9. The electro-optical device according to claim 4, further comprising:
a third storage capacitor including:
a third capacitor electrode;
an insulating film facing the third capacitor electrode; and
a fourth capacitor electrode opposed to the third capacitor electrode with the insulating film provided therebetween and including a same film as the semiconductor layer.

10. The electro-optical device according to claim 9, the fourth capacitor electrode is formed to extend from the drain region of the thin film transistor.

11. The electro-optical device according to claim 9, the fourth capacitor electrode is formed in parallel with the scanning line.

12. The electro-optical device according to claim 9, the capacity of the second storage capacitor is smaller than that of each of the first storage capacitor and the third storage capacitor.

13. The electro-optical device according to claim 4, further comprising:
a fourth storage capacitor including:
the fourth capacitor electrode including a same film as the semiconductor layer;

an insulating film facing the fourth capacitor electrode; and
a fifth capacitor electrode arranged opposite to the fourth capacitor electrode, with the insulating film provided therebetween, for shielding the semiconductor layer from light.

14. The electro-optical device according to claim 13, the fifth capacitor electrode is electrically connected to the first capacitor electrode in the periphery of the image display region.

15. The electro-optical device according to claim 2, further comprising:
a fifth storage capacitor including:
the first capacitor electrode;
an insulating film laminated on the first capacitor electrode; and
a sixth capacitor electrode arranged opposite to the first capacitor electrode with the insulating film provided therebetween to form the pixel electrode.
16. The electro-optical device according to claim 15, the fifth storage capacitor is formed over the entire periphery of each pixel.
17. An electro-optical device, comprising:
a scanning line formed above a substrate;
a data line formed above the substrate;
a thin film transistor disposed in correspondence with an intersection of the scanning line and the data line;
a pixel electrode electrically connected to a drain region of the thin film transistor; and
a storage capacitor having a first conductive film which forms at least one capacitor electrode of the storage capacitor, and a second conductive light-shielding film which forms another capacitor electrode and is arranged above a gate electrode of the thin film transistor, the second light-shielding conductive film electrically connecting a semiconductor layer constituting the drain region to the pixel electrode,
the second conductive light-shielding film covers at least portions of a channel region of the thin film transistor, a junction region between the source region and the channel region of the thin film transistor, a junction region between the drain region and the channel region of the thin film transistor, and the source and drain regions adjacent to the respective junction regions.
18. The electro-optical device according to claim 17, the first conductive film covers the channel region, and the data line is formed on the channel region and the adjacent region thereof so as not to project from the first conductive film in a plan view.
19. The electro-optical device according to claim 17, each of the first conductive film and the data line includes a film containing at least Al.
20. The electro-optical device according to claim 17, the first conductive

film is extended from the image display region in which the pixel electrode is arranged to the periphery thereof, and connected to a constant potential source in the peripheral region.

21. An electro-optical device, comprising:
 - a scanning line formed above a substrate;
 - a data line formed above the substrate;
 - a thin film transistor disposed in correspondence with an intersection of the scanning line and the data line;
 - a pixel electrode electrically connected to a drain region of the thin film transistor; and
 - a storage capacitor having a first conductive film which forms at least one capacitor electrode of the storage capacitor, and a second conductive light-shielding film which forms another capacitor electrode and is arranged above a gate electrode of the thin film transistor, the second light-shielding conductive film electrically connecting a semiconductor layer constituting the drain region to the pixel electrode; and
 - a channel region of the thin film transistor covered with the data line arranged above the first conductive film with an insulating film formed therebetween.
22. An electro-optical device, comprising:
 - a scanning line formed above a substrate;
 - a data line formed above the substrate;
 - a thin film transistor disposed in correspondence with an intersection of the scanning line and the data line;
 - a pixel electrode electrically connected to a drain region of the thin film transistor;
 - a storage capacitor having a first conductive film which forms at least one capacitor electrode of the storage capacitor, and a second conductive film which forms another capacitor electrode and is arranged above a gate electrode of thin film transistor, the second conductive film electrically connecting a semiconductor layer constituting the drain region to the pixel electrode; and
 - a third conductive film which includes a same film as the gate electrode, and which is arranged opposite to the second conductive film with an interlayer insulating film formed therebetween,
 - the first conductive film and the third conductive film being electrically

connected to each other by the first conductive film and the third conductive film directly contacting each other.

23. The electro-optical device according to claim 22, the first conductive film and the third conductive film being electrically connected to each other, and the second conductive film and a fourth conductive film being electrically connected to each other.

24. The electro-optical device according to claim 22, the third conductive film includes a capacitor line which is extended from the image display region to the periphery thereof along the scanning line, and connected to a constant potential source in the peripheral region, the first conductive film being connected to the capacitor line.

25. The electro-optical device according to claim 24, the underlying light-shielding film includes a light-shielding conductive film, and is connected to the capacitor line of each pixel.

26. An electro-optical device, comprising:
 a scanning line formed above a substrate;
 a data line formed above the substrate;
 a thin film transistor disposed in correspondence with an intersection of the scanning line and the data line;
 a pixel electrode electrically connected to a drain region of the thin film transistor; and
 a storage capacitor having a first conductive film which forms at least one capacitor electrode of the storage capacitor, and a second conductive light-shielding film which forms another capacitor electrode and is arranged above a gate electrode of the thin film transistor, the second light-shielding conductive film electrically connecting a semiconductor layer constituting the drain region to the pixel electrode,
 the first conductive film includes a film having a lower reflectance than the data line.

27. The electro-optical device according to claim 26, further comprising:
 an underlying light-shielding film which is arranged below the semiconductor layer on the substrate and which is formed to cover at least the channel region as viewed from the opposite side of the substrate, and not to project from the first conductive film in a plan view of the channel region and the adjacent region thereof.

28. The electro-optical device according to claim 27, at least either of the first conductive film and the underlying light-shielding film is made of a high-melting-point metal.

29. The electro-optical device according to claim 26, the first conductive film has substantially the same size as the second conductive film under the data line.

30. A projection display device, comprising:
an electro-optical device including:
a scanning line formed above a substrate;
a data line crossing the scanning line;
a thin film transistor disposed in correspondence with an intersection of the scanning line and the data line;
a pixel electrode electrically connected to a drain region of the thin film transistor; and
a first storage capacitor formed by a plurality of layers between a gate electrode of the thin film transistor and the data line; and
a projection device that projects a light passing through the electro-optical device.

31. An electrode-optical device, comprising:
a scanning line formed above a substrate;
a data line formed above the substrate;
a thin film transistor disposed in correspondence with an intersection of the scanning line and the data line;
a pixel electrode electrically connected to a drain region of the thin film transistor; and
a storage capacitor having a first conductive light-shielding film which forms one of capacitor electrodes of the storage capacitor, is arranged below the pixel electrode, and a second conductive film which forms another capacitor electrode, is arranged above a gate electrode of the thin film transistor and below the first conductive light-shielding film, the second conductive film electrically connecting a semiconductor layer constituting the drain region to the pixel electrode,

the first conductive light-shielding film and the second conductive film covering at least portions of a channel region of the thin film transistor, a first junction region between the source region and the channel region of the thin film transistor, a second junction region between the drain region and the channel region of the thin film transistor, the source and drain regions respectively adjacent to the first junction region and the second junction region, a scanning line region and a data line region.